

Swimming pool heat pump



Directions for installation and maintenance

CE



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1- Introduction

We thank you for having chosen our Heat pump.

This installation and maintenance notice contains the necessary information to its installation (delivery control, the installation, the connections) and to its repair. It is a complementary document to the user's manual which describes its instructions for use.

We invite you to read it first.

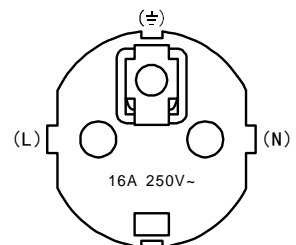
2- Caution

This document is an integral part of the product and it must stay in the technical room.

This Heat pump is exclusively for heating swimming pools. Any other use not in conformity and random will be considered as dangerous and unsuitable.

The assembly, the electric connection and the start up must be carried out by specialized and professional person.

When connect plug to socket (power supply), please make sure that live wire, neutral wire, earth wire to plug should be connected as right drawing.



It is essential to maintain the temperature in the swimming pool lower than the recommended value by the swimming pool's manufacturer.

Please make sure that minimum water flow speed is 3.0m³/h.

In a concern to a constant improvement, our products can be modified without notice; the present pictures in this note or the characteristics which are described are not contractual.

3- Delivery's control

At the delivery time, check the condition of packing; in case of damages, have reservation about them to the carrier, before 48 hours and by registered letter with acknowledged receipt.

Before any manipulation, check the complete state of the machine.

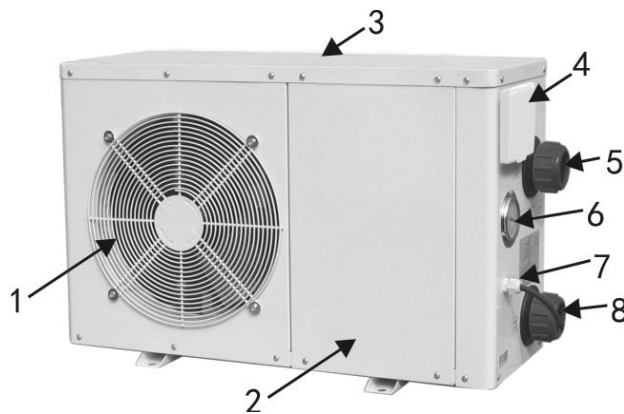
4- Technical description

Characteristics:

MODEL	BP-50WS-C
Power supply	230V~, 50Hz
Heating consumption power * (kW)	0.9
Heating restored power *(kW)	4.6
Heating nominal intensity *(A)	4.3
Air flow (m ³ /H)	1400
Noise level (d(B)A)	<48
Refrigerant gas	R410a
Rate of average filling of gas (g)	550
Net weight of the unit (kg)	35
Overall sizes L x W x H (cm)	78 x 27 x 51

*** Possible variations of value according to climatic conditions**

Outside:

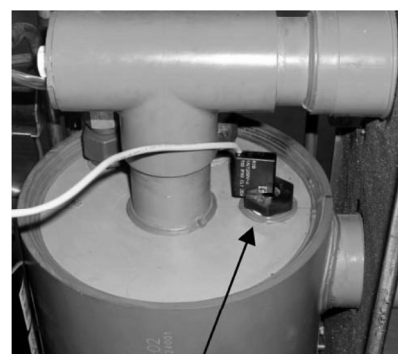
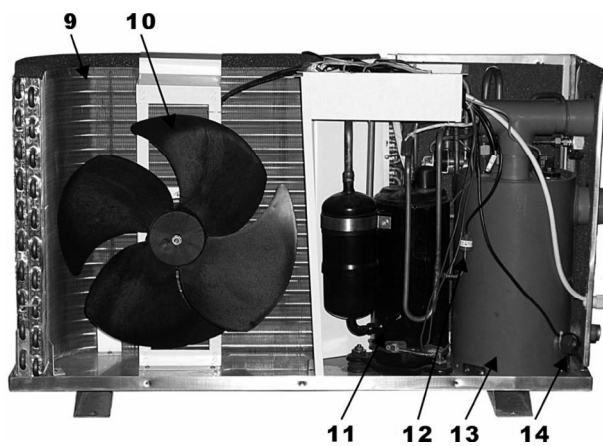


1	Fan protection grid (blow side)
2	Metal cabinet
3	Top cover
4	Control panel
5	Fast connection for water outlet
6	Refrigerant pressure manometer
7	Wire connection for power supply
8	Fast connection for water inlet

Inside:

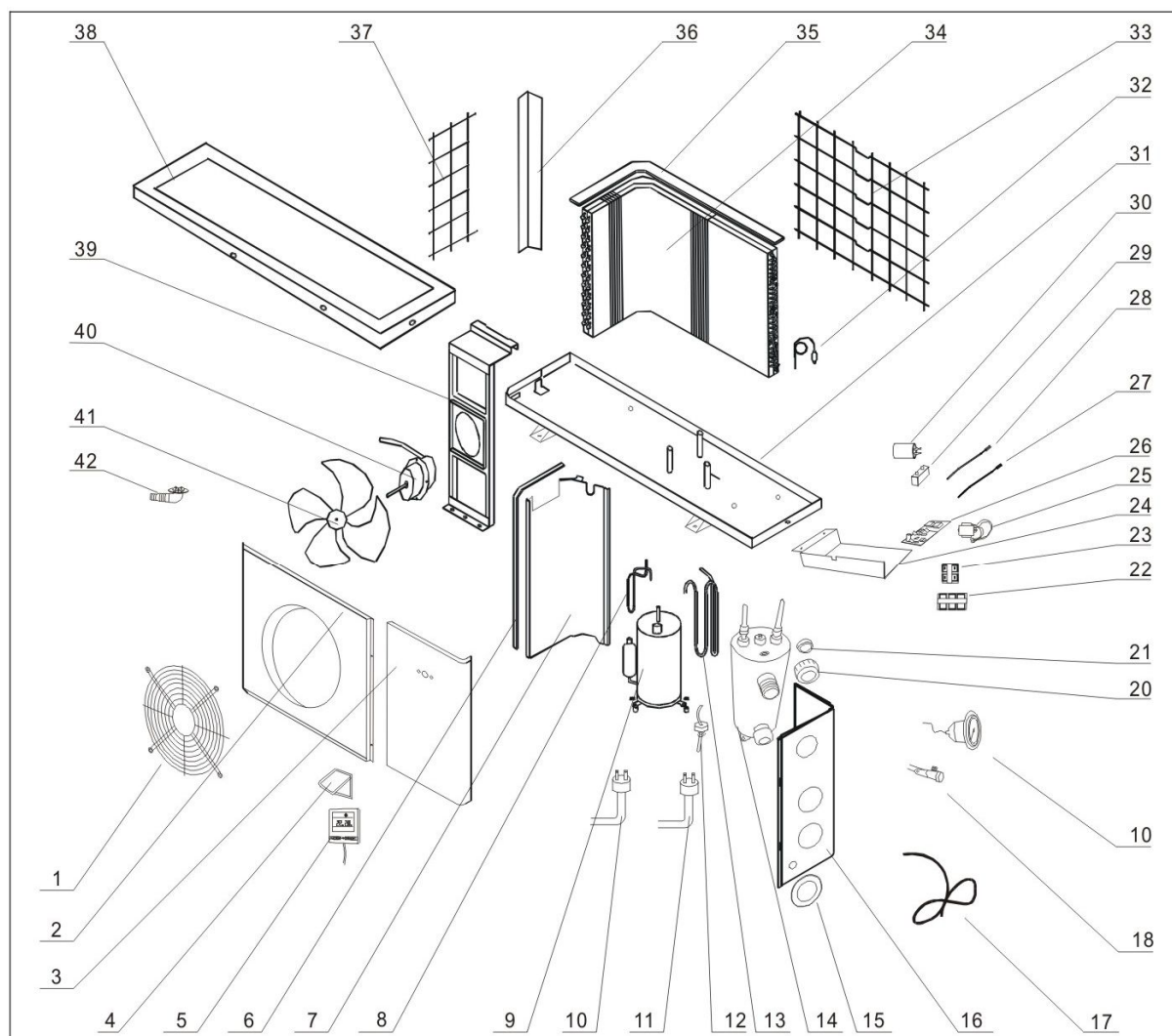
(Front sheet cover and panel removed)

9	Evaporator
10	Fan
11	Compressor
12	High and low pressure interruptor
13	Titanium heat exchanger
14	Temperature sensor of swimming pool water
15	Water flow switch



15

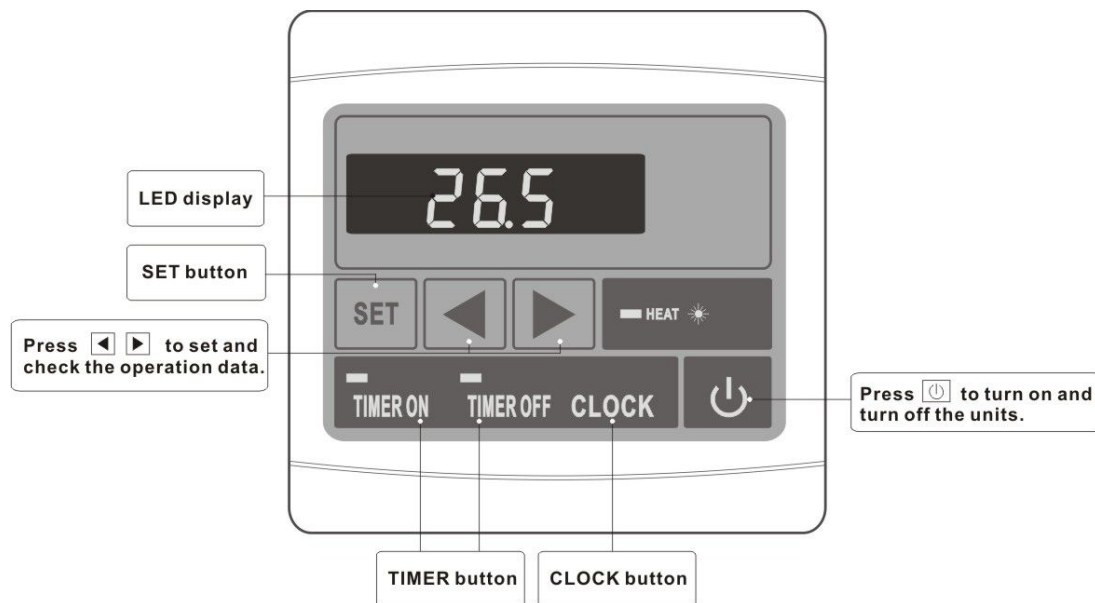
BP-50WS-C Explored view



1	Fan protection net	17	Power cord	33	Rear net
2	Front panel 1	18	Mouth injecting gas	34	Condenser
3	Front panel 2	19	Pressure manometer	35	Condenser top polyfoam
4	Control panel cover	20	Fast connection	36	Left carriage
5	Wire controller	21	Gasket	37	Left net
6	Verge board polyfoam	22	Terminal	38	Top cover
7	Verge board	23	Public terminal	39	Motor bracket
8	Exhaust pipe	24	Electrical box	40	Fan motor
9	Compressor	25	Transformer	41	Fan
10	High pressure interruptor	26	Circuit board	42	Drain tube
11	Low pressure interruptor	27	Water sensor		
12	Water flow switch	28	Compressor sensor		
13	Gas returning pipe	29	Motor capacitor		
14	Titanium heat exchanger	30	Compressor capacitor		
15	Rubber water fender	31	Frame		
16	Right size board	32	Capillary		

Wire control operation

The function of the LED display and control:

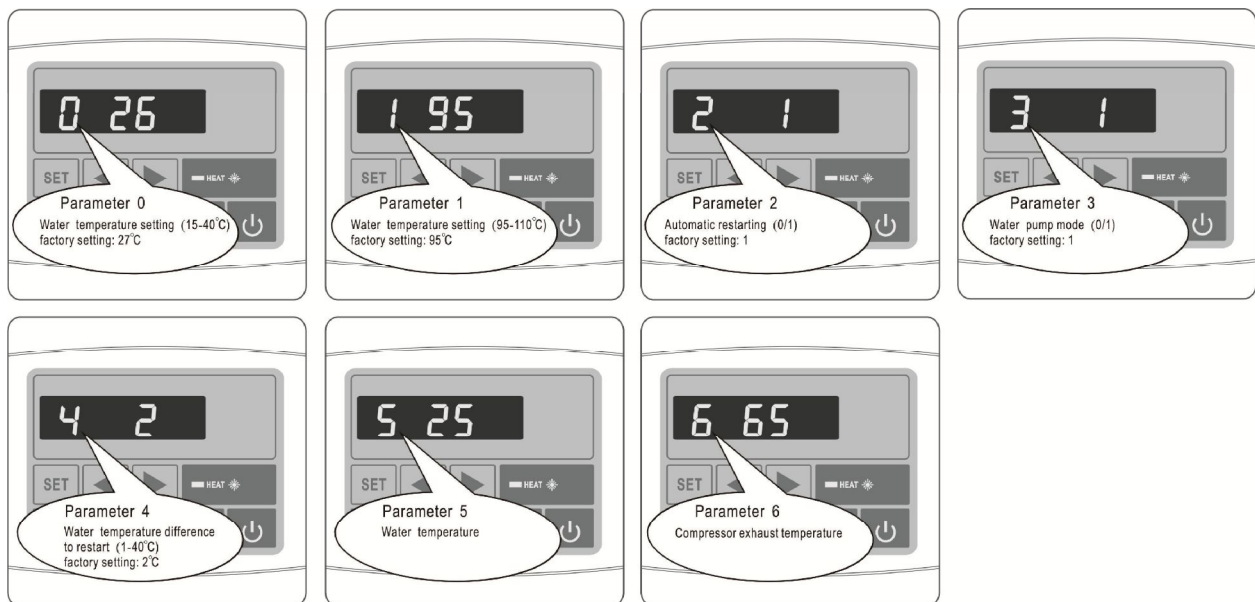


Set the operation parameter:

When the unit powered up but not running, press "◀" or "▶" to enter operation parameter interface. (parameter from 0-5, see Operation Parameter Table).

- ◎ Press "SET" to enter current parameter setting, press "◀" or "▶" to set data for parameter, press "SET" again exit the current parameter setting.
- ◎ No press in 8s, it will exit the setting interface.
- ◎ If the heat pump is running, press "◀" or "▶" to enter operation parameter check interface, But can't change parameters (Except the parameter 0 for water temperature setting).
- ◎ If the heat pump is running, the LED display shows current water temperature;
If the heat pump is turnoff, the LED display shows current time.

NO	Meaning	Range	Change	Factory setting
0	Water temperature setting	15 ~ 40°C	YES	27°C
1	Compressor protection Exhaust temperature	95 ~ 110°C	YES	95°C
2	Automatic restart	0/1	YES	1
3	Water pump mode	0/1	NO	1
4	Water temperature difference to restart	1 ~ 10°C	YES	2
5	Water temperature	-9 ~ 99°C	Measured value	
6	Compressor Exhaust temperature	-9 ~ 125°C	Measured value	



Setting the time

press "**CLOCK**" button to set the time. The time displayed blinks, press "**CLOCK**" button again and then use the arrow "◀" and "▶" to change the hour setting. To change the minutes, press "**CLOCK**" button again. Once the correct time is set. press "**CLOCK**" button again the end. The display returns to normal after 8 seconds.

Timer switch ON and Timer switch OFF:

Once the time has been set correctly, this function allows a machine start time and a machine stop time to be programmed during the day.

Press "**TIMER ON**" button the time displayed and "ON" to blink, press "**TIMER ON**" button again Change the hour using the "◀" and "▶" keys. Press "**TIMER ON**" button again to change the minutes using the "◀" and "▶" keys. Press "**TIMER ON**" button again the end.

Press "**TIMER OFF**" button the time displayed and "OFF" to blink, press "**TIMER OFF**" button again Change the hour using the "◀" and "▶" keys. Press "**TIMER OFF**" button again to change the minutes using the "◀" and "▶" keys. Press "**TIMER OFF**" button again the end.

The time setting is from 0 to 24 hours to recycle.

When the setting time for on and off is the same, the setting time is not available.

When the setting timer, Press "**CLOCK**" to deactivate TIMER.

Key lock:

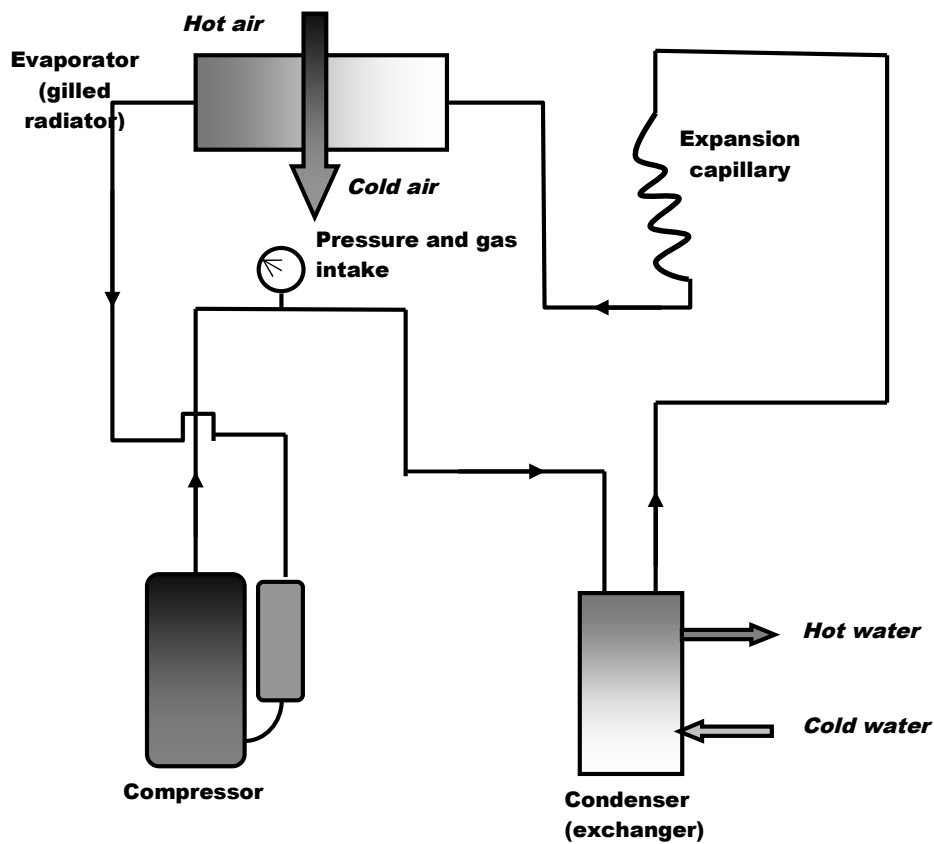
Press "**SET**" and "◀" 5 seconds to set keylock.

Press "**SET**" and "◀" 5 seconds again to release keylock.

General diagram of the refrigerating circuit

Swimming-pool water's heating mode:

The cold and liquid refrigerant fluid absorbs the heat contained in the air through the evaporator (gilled radiator), in which it is vaporizing; it is then put up in pressure and in temperature by the compressor which sends it in the condenser (exchanger) where it loses its heat (in giving it to the water of swimming pool) and comes back in liquid state; it loses its pressure and still cools in the expansion capillaries before turning back to the evaporator for a new cycle.



Safety and control systems

The heat pump is fitted out:

Temperature control:

- ▶ **A temperature sensor placed on the exchanger, ensuring the cut of the heat pump when the temperature of the water reaches the required temperature. The normal cycle restarts when the temperature in the exchanger goes down to a temperature lower of 2°C (factory settings) than this required.**

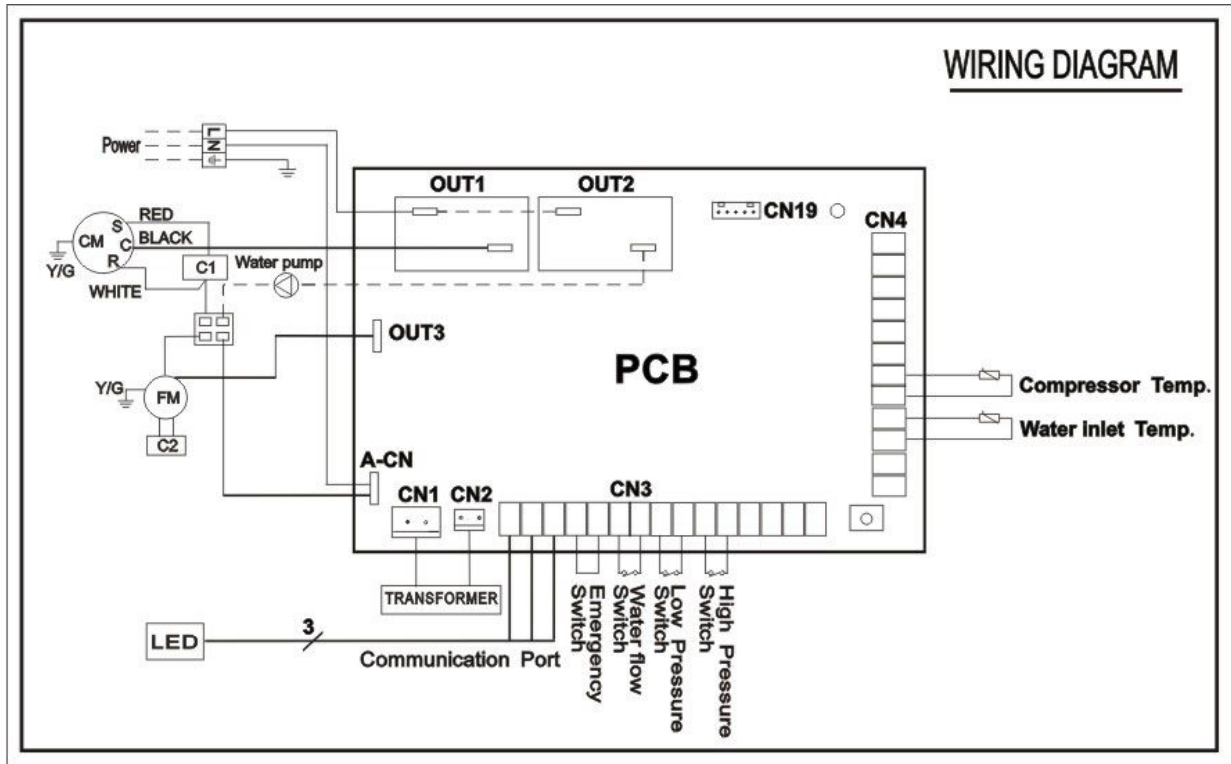
With 4 safety systems:

- ▶ **A water flow detector placed at the exit of the exchanger**
- ▶ **A high pressure gas circuit breaker, a low pressure gas circuit breaker**
- ▶ **An outlet compressor temperature sensor**

If a defect occurs on one of these systems (defective system, off-line or abnormal measured value) a message of defect appears on the display screen; see the paragraph “Error codes and what to do” of this note.

Caution: the removal or the shunt of one of the control or safety systems involves the cancellation of the guarantee.

Electric diagram



5- Installation

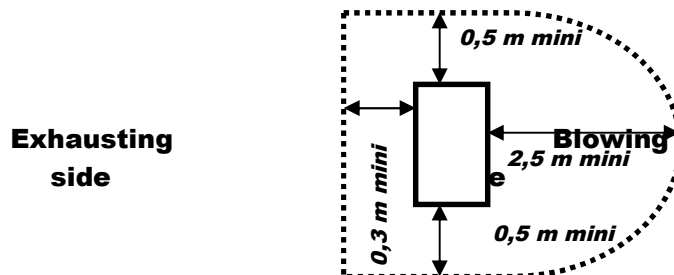
Rules of installation:

Electric and hydraulic connections must be carried out according to standards in effect (NF C 15 100, CE I 364).

The machine must be installed outside.

The machine must be posed on its ant vibratory studs, set and lying flat and on a massive base (concrete slab); this base must have a sufficient height to prevent any entry of water by the bottom of the machine. Height must be adjusted to fit the connector collecting the condensates.

The obstacles such as wall and vegetation must be separated from the machine as indicated on the diagram below.



Do not to install the Heat pump in a confined place (the fan would recycle its air and the Heat pump would be down performance).

The fan should not blow towards the windows or crossing point.

Safety distance between the swimming pool and the foot bath: the fitter must imperatively refer to the standard C15-100 section 702; the machine should not be installed in volume 1 surrounding the swimming pool but at least in volume 2 so at a distance of 3 m minimum of the swimming pool and foot bath.

Other precautions of installation:

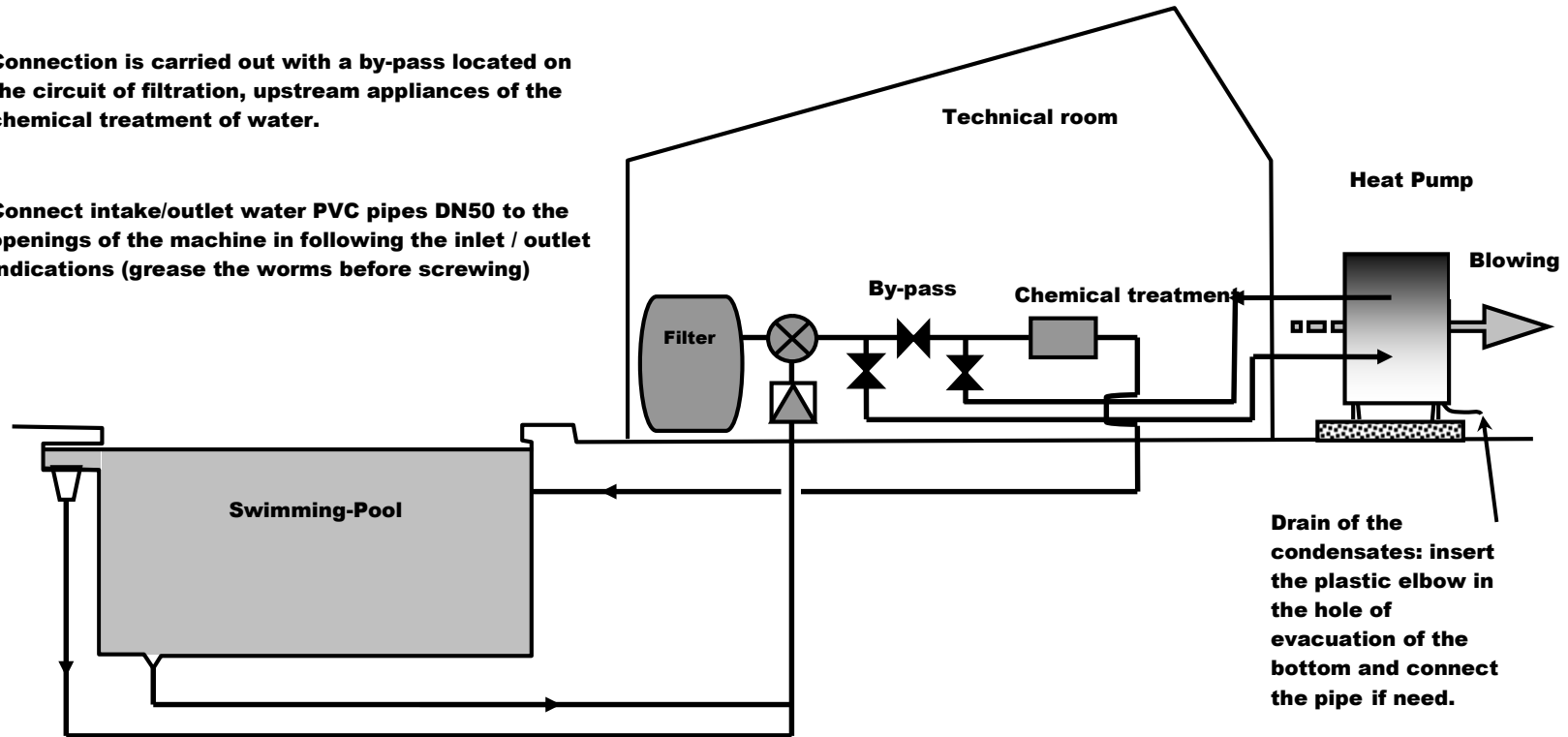
- Do not to install the machine near a way with circulation of car in order to avoid mud projections.
- Avoid directing blowing against dominant winds.
- If the machine is intended to be used in winter, put it in a place protected from the falls of snow.
- The machine must be able to be supervised in order that children do not play around

**Hydraulic connections:
respect imperatively**

To

**Connection is carried out with a by-pass located on
the circuit of filtration, upstream appliances of the
chemical treatment of water.**

**Connect intake/outlet water PVC pipes DN50 to the
openings of the machine in following the inlet / outlet
indications (grease the worms before screwing)**



Electric connections:

CAUTION: before connecting the machine, make sure that the feeder is disconnected to the electrical network.

The electric installation must be carried out by an experienced electrician and the supply must come from a severing equipment and differential protection; the whole must be carried out according to standards' in force in the country where the material is installed.

Characteristics of the electric supply:

- 230 V +/- 10%, single-phase current, 50 Hz
- Mode of neutral TT and TN.S; the circuit of heat pump must be connected to an earth circuit.

Characteristic minimum of the protection:

- Protection must be of 16 A, by circuit breaker or fuse; it must protect the Heat pump exclusively; the circuit breaker must be specified with curve D, the fuse must be specified Am.
- Differential protection : 30 mA (the length of cable between the connector block of the heat pump and the protection of should not exceed 12 m).

Control :

The heat pump is fitted out with a water flow detector which function is to apply the signal to the electronic card when the water flow is sufficient.

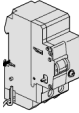
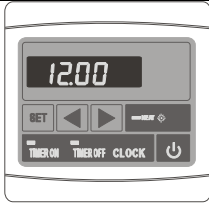
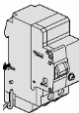


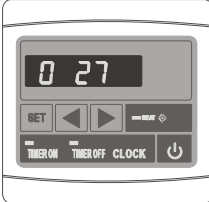

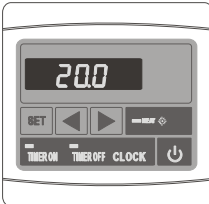

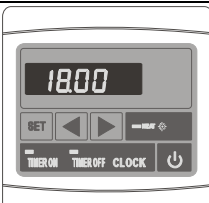
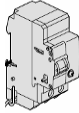

We recommend when it is possible to control the heat pump to the filtration pump (by contacting relay non supplied to insert in the feeding circuit of the heat pump).

The remmended water flow speed is 3m³/h.

Removed control panel:

An extension cord allows the removal of the panel in inserting it in a standard electric box into the technical local; the option is supplied with a cover allowing to seal the aperture let by the removal of the control panel.

Procedure of use

Action	External Appliance or Button of heat pump	Display	Heat pump answer
Put the heat pump under tension	Engage the circuit breaker of the heat pump 		Display current time
Put in circulation the swimming pool water into the pipes	Engage the circuit breaker of pump of filtration 		
Set the water temperature into the swimming pool	  adjustable from 15°C to 40°C		The heat pump heats until the required temperature (P7)
Start	Press the button 		Start between 60 second
Stop	Press the button 		Immediate stop and wait
Switch off	Use the circuit breaker of pump of filtration, and heat pump 		Complete stop

6- Water Flow and refrigerating circuit pressure

After putting into service, do the settings of pressure of the refrigerant circuit for having an optimal operating of the heat pump, following:

Stage 1:

Before starting the Heat Pump, ambient temperature around 20°C, refrigerant meter shows pressure from 14 to 16kg/cm².



Stage 2:

Close completely the by pass valve and open large inlet and outlet valves of the Heat Pump; in these conditions the totality of the water flow goes by the Heat Pump.

Put into service the Heat Pump in heating mode, wait for the indicated pressure being stabilized; the correct setting of the pressure is from 21 to 35 kg/cm²;

In most of cases (pump of filtration given a flow until 20m³/h) you do not have to open the by pass valve.

If the stabilized pressure is under 21kg/cm², the progressive opening of the by pass valve will allow rising this pressure.

The adjustment of the by pass valve done, you have in principle no reason to modify it during the season. See the paragraph “Environment problem” too.

7 – Environment problem

Under certain external conditions the heat exchanges between the refrigerant and the water on one hand and between the fluid and the air on the other hand are insufficient; the consequence is that the refrigerating circuit runs up in pressure and the compressor consumes more electricity.

The temperature sensors compressor outlet and the magnetic circuit breaker on the compressor power supply protect the compressor from these extreme conditions; the error messages *EE 06* occur.

The condition causing this situation is as follows:

In heating mode:

- insufficient water flow:

close the by-pass valve for increasing the refrigerant exchange → water

Note: these error codes are likely to occur if temperature of swimming pool water is high and the ambient air is hot.

8 – Error codes and what to do:

This table explains the error codes caused by a defective regulating component or by a security operation.

Screen and state of the heat water pump	Component	Possible	Intervention	Second reason if the intervention is without effect
PP 01 Compressor and fan stopped	Water temperature sensor	Sensor disconnected, non supplied or defective	Check the connections, the wires, change it or replace the electronic card	
PP 02 Compressor and fan stopped	compressor exhaust temperature sensor	Sensor disconnected, non supplied or defective	Check the connections, the wires, change it or replace the electronic card	
EE 01 Compressor and fan stopped	High pressure, Low pressure protection	Insufficient water flow	Check the water flow	
		Pressure switch out of order	Replace the pressure switch	Have the heat pump checked by a refrigeration technician
		Too much refrigerant gas present		
EE 02 Compressor and fan stopped	Low pressure protection	Not enough refrigerant gas	Have the heat pump checked by a refrigeration technician	
		Leak in the cooling conduits	Have the heat pump checked by a refrigeration technician	
EE 03 Compressor and fan stopped	Flow switch	Flow switch disconnected, non supplied or defective	Check the connections, the wires, change it or replace the electronic card	
EE 04 The unit cannot be started	Emergency switch	Emergency switch disconnected	Check the connections and the wires	
EE 06 Compressor and fan stopped	compressor exhaust temperature sensor	Compressor exhaust temperature detected up to 95°C more than 3 times in 1HR	Environment problem Refrigerant leakage Capillary is half blocked	
EE 08 The wire control can't operated	Wire control Communication error	Signal cable of wire Control is loose	Check the connection of signal cable	